



[6450-01-P]

DEPARTMENT OF ENERGY

Office of Energy Efficiency and Renewable Energy

[Case No. RF-042]

Petition for Waiver of GE Appliances from the Department of Energy Residential Refrigerator and Refrigerator-Freezer Test Procedure and Grant of Interim Waiver

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Notice of Petition for Waiver, Notice of Granting Application for Interim Waiver, and Request for Public Comments.

SUMMARY: This notice announces receipt of a petition for waiver from GE Appliances (GE) seeking an exemption from specified portions of the U.S. Department of Energy (DOE) test procedure for determining the energy consumption of electric refrigerators and refrigerator-freezers. GE seeks to use an alternate test procedure to address certain issues involved in testing certain specific basic models identified in its petition that are equipped with dual-compressor systems that GE contends cannot be accurately tested using the currently applicable DOE test procedure. DOE solicits comments, data, and information concerning GE's petition and its suggested alternate test procedure. Today's notice also grants GE with an interim waiver from the electric

refrigerator-freezer test procedure, subject to use of the alternative test procedure set forth in this notice.

DATES: DOE will accept comments, data, and information with respect to the GE Petition until **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: You may submit comments, identified by case number “RF-042,” by any of the following methods:

- Federal eRulemaking Portal: <http://www.regulations.gov>. Follow the instructions for submitting comments.
- E-mail: AS_Waiver_Requests@ee.doe.gov Include the case number [Case No. RF-042] in the subject line of the message.
- Mail: Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Program, Mailstop EE-2J/1000 Independence Avenue, SW, Washington, DC 20585-0121. Telephone: (202) 586-2945. Please submit one signed original paper copy.
- Hand Delivery/Courier: Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Program, 950 L’Enfant Plaza SW, Suite 600, Washington, DC 20024. Please submit one signed original paper copy.

Docket: For access to the docket to review the background documents relevant to this matter, you may visit the U.S. Department of Energy, 950 L’Enfant Plaza SW,

Washington, DC, 20024; (202) 586-2945, between 9:00 a.m. and 4:00 p.m., Monday through Friday, except Federal holidays. Available documents include the following items: (1) this notice; (2) public comments received; (3) the petition for waiver and application for interim waiver; and (4) prior DOE rulemakings regarding similar refrigerator-freezers. Please call Ms. Brenda Edwards at the above telephone number for additional information.

FOR FURTHER INFORMATION CONTACT: Mr. Bryan Berringer, U.S.

Department of Energy, Building Technologies Program, Mail Stop EE-2J, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Telephone: (202) 586-0371. E-mail: Bryan.Berringer@ee.doe.gov.

Mr. Michael Kido, U.S. Department of Energy, Office of the General Counsel, Mail Stop GC-71, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585-0103. Telephone: (202) 586-8145. E-mail: Michael.Kido@hq.doe.gov.

SUPPLEMENTARY INFORMATION:

I. Background and Authority

Title III, Part B of the Energy Policy and Conservation Act of 1975, as amended (EPCA), Pub. L. 94-163 (42 U.S.C. 6291-6309, as codified), established the Energy Conservation Program for Consumer Products Other Than Automobiles, a program covering most major household appliances, which includes the electric refrigerators and

refrigerator-freezers that are the focus of this notice.¹ Part B includes definitions, test procedures, labeling provisions, energy conservation standards, and the authority to require information and reports from manufacturers. Further, Part B authorizes the Secretary of Energy to prescribe test procedures that are reasonably designed to produce results that measure the energy efficiency, energy use, or estimated annual operating costs of a covered product, and that are not unduly burdensome to conduct. (42 U.S.C. 6293(b)(3)) The test procedure for electric refrigerators and electric refrigerator-freezers is contained in 10 CFR part 430, subpart B, appendix A.

The regulations set forth in 10 CFR part 430.27 contain provisions that enable a person to seek a waiver from the test procedure requirements for covered products. The DOE will grant a waiver if it is determined that the basic model for which the petition for waiver was submitted contains one or more design characteristics that prevents testing of the basic model according to the prescribed test procedures, or if the prescribed test procedures may evaluate the basic model in a manner so unrepresentative of its true energy consumption characteristics as to provide materially inaccurate comparative data. 10 CFR 430.27(f)(2). Petitioners must include in their petition any alternate test procedures known to the petitioner to evaluate the basic model in a manner representative of its energy consumption. The Assistant Secretary may grant the waiver subject to conditions, including adherence to alternate test procedures. 10 CFR 430.27(f)(2). Waivers remain in effect pursuant to the provisions of 10 CFR 430.27(l).

¹ For editorial reasons, upon codification in the U.S. Code, Part B was re-designated Part A.

The waiver process also allows the DOE to grant an interim waiver from test procedure requirements to manufacturers that have petitioned DOE for a waiver of such prescribed test procedures. 10 CFR 430.27(e)(2). Within one year of issuance of an interim waiver, DOE will either: (i) publish in the Federal Register a determination on the petition for waiver; or (ii) publish in the Federal Register a new or amended test procedure that addresses the issues presented in the waiver. 10 CFR 430.27(h)(1). When DOE amends the test procedure to address the issues presented in a waiver, the waiver will automatically terminate on the date on which use of that test procedure is required to demonstrate compliance. 10 CFR 430.27(h)(2).

II. Petition for Waiver of Test Procedure

On June 27, 2014, GE submitted a petition for waiver from the test procedure applicable to residential electric refrigerators and refrigerator-freezers set forth in 10 CFR part 430, subpart B, appendix A. GE is seeking a waiver because it is developing new refrigerator-freezers that incorporate a dual-compressor design that it believes is not properly accounted for in DOE's amended test procedure published on April 21, 2014 (78 FR 22320). In its petition, GE seeks a waiver from the new DOE test procedure applicable to refrigerators and refrigerator-freezers under 10 CFR part 430 for two basic models of dual-compressor system products. Specifically, based upon the information provided by GE, these basic models demonstrate non-uniform cycling of their compressors, which prevents the verification of two criteria in the Appendix A test procedure—to ensure (a) that the first part of the test comprise a period of stable

operation, and (b) that the second part of the test (used to measure the energy use contribution of the defrost cycle(s)) start and end during periods of stable operation.

DOE previously granted a similar waiver to GE through a subsequent Decision and Order (78 FR 38699 (June 27, 2013)) under Case No. RF-029 pertaining to 10 CFR part 430, subpart B, appendix A1. DOE also granted similar waivers to Sub-Zero (77 FR 5784 (February 6, 2012)), LG (77 FR 18327 (March 26, 2013)); and Samsung (78 FR 35899 (June 14, 2014)) and (79 FR 19884 (April 10, 2014)).

In its final rule published on April 21, 2014 (78 FR 22320), which amended the test procedure for refrigerators and refrigerator-freezers in Appendix A, DOE incorporated provisions to address the testing of products with multiple compressors, which were intended to obviate the need for waivers for multiple-compressor products such as the ones previously granted to GE and others, if these products are tested using the new Appendix A. However, in its petition for waiver, GE contends that due to certain characteristics of the basic models listed in the petition, the Appendix A test procedure does not accurately measure the energy consumption of these basic models. Specifically, GE claims that requirements in the Appendix A test procedure—to ensure (a) that the first part of the test comprise a period of stable operation, and (b) that the second part of the test (used to measure the energy use contribution of the defrost cycle(s)) start and end during periods of stable operation—cannot be applied to these basic models, because their compressor cycles do not repeat uniformly, which is one of the assumptions built into the test procedure.

In lieu of using Appendix A, GE has submitted an alternate test procedure to account for the energy consumption of its refrigerator-freezer models with dual compressors. GE's alternative test is essentially the same as the test for multiple-compressor products with automatic defrost in section 4.2.3 of Appendix A, except that (a) the test period for the first part of the test would not be required to meet the requirements for evaluation of stable operation provided in section 1.22 of Appendix A, (b) the second part of the test would have a minimum duration—this would be at least 24 hours, unless a second defrost (other than the target defrost captured within the test period) occurs before the end of 24 hours, in which case, the test period duration would be at least 18 hours, (c) the start of the second part of the test would occur “at the end of a regular freezer compressor on-cycle after the previous defrost occurrence” rather than during a period of stable operation as defined in section 1.22 of Appendix A, and (d) the end of the second part of the test would occur “at the end of a freezer compressor on-cycle before the next defrost occurrence” rather than during a period of stable operation as defined in section 1.22 of Appendix A.

GE believes its alternate test procedure will allow for the accurate measurement of the energy use of these products, which GE contends is not achieved by the current Appendix A test procedure. Specifically, due to the non-uniform compressor cycles of this product, which prevent consistent application of the requirements provided in section 1.22 of Appendix A for evaluating the stable operation of a tested unit, the alternative test would not explicitly impose these stable operation requirements. Based on the

information provided by GE, the variation in test results associated with different selections of test periods would be insignificant as long as the test starts after the 24-hour stabilization period, which is required both by the Appendix A test procedure and the alternative test procedure suggested by GE. Further, GE's alternative test's minimum duration for the second part of the test would also not significantly affect the results.

Although not explicitly stated in the alternative test method, or in GE's petition, DOE understands the term "stable operation" used in the petition to have a different meaning than the same term as used in Appendix A, since the alternative test method does not use the same stability criteria. In this case, DOE understands "stable operation" to mean operation after steady-state conditions have been achieved but excluding any defrost cycles or events associated with a defrost cycle, such as precooling or recovery, and that this term would apply in the same way for the first and second parts of the test. DOE understands the term also to mean operation in which the average rate of change of compartment temperatures is zero or very close to zero—the temperatures may fluctuate around representative average temperatures as the compressors cycle on and off, but over several compressor cycles, these average compartment temperatures would not significantly change. The key difference in this interpretation of stable operation as compared with the definition in Appendix A is that it involves neither assignment of a specific maximum rate of change of the average temperature nor specification of a method to verify that operation is stable. DOE further notes that this particular use of the term "stable operation" is limited solely to the basic models that are the subject of this waiver, as DOE has verified using information provided by GE about the actual

operational characteristics of these models that such a test is appropriate in this limited case.

GE also requests an interim waiver from the existing DOE test procedure. An interim waiver may be granted if it is determined that the applicant will experience economic hardship if the application for interim waiver is denied, if it appears likely that the petition for waiver will be granted, and/or the Assistant Secretary determines that it would be desirable for public policy reasons to grant immediate relief pending a determination of the petition for waiver. See 10 CFR 430.27(e)(2).

As noted previously, DOE recently addressed multiple compressor products in its April 21, 2014 final rule. In considering GE's petition for waiver, DOE sought additional details about the specific operating characteristics of the products that are the subject of the petition in order to determine whether they cannot be tested using the section of the amended test procedure that was adopted specifically to address such products. GE indicated in its petition that the compressors serving the fresh food and freezer compartments of these models have non-synchronous cycles that do not repeat uniformly, which prevents these models from achieving the temperature stability conditions specified in the Appendix A test procedure. To better understand GE's claim and the issues raised in the petition, DOE requested data regarding the operational characteristics of these products, which GE provided. DOE was specifically concerned that the use of GE's proposed test method could present the risk of truncation error in the energy use measurement or the possibility of variation between separate tests of the same unit due to

temperature drift in the compartments or differences in the operational state of the compressors at the beginning or end of the test period. The data provided by GE indicated that these models demonstrate non-uniform cycling that makes direct use of the Appendix A requirements for evaluating temperature stability problematic—these requirements may be appropriate for some operating modes of the basic models, but not for other operating modes. The data also showed that the use of GE’s proposed test method is unlikely to result in significant variation in test measurements for these particular models on the basis of the selected test period. DOE notes, however, that these conclusions are limited to the models listed in GE’s petition based upon the data provided by GE and that other basic models may demonstrate operating characteristics that differ from these models as to make this alternative test method inappropriate for measuring their energy use. Should DOE receive petitions for waiver requesting use of the alternative test identified in this notice for other basic models, DOE may request from the manufacturer information about the operation of those basic models that would demonstrate that their energy use can be accurately measured using this alternative test and that such models cannot in fact be tested using the currently assigned test method in Appendix A.

For the reasons discussed above, DOE has determined that use of the currently required DOE test procedure for the specific GE models identified in its petition would provide test results so unrepresentative as to provide materially inaccurate comparative data. Therefore, it appears likely that GE’s petition for waiver will be granted. For these same reasons, DOE has also determined that it is desirable for public policy reasons to grant GE immediate relief pending a determination of the petition for waiver. DOE

grants GE's application for interim waiver from testing of the two basic models of refrigerator-freezers identified in petition for waiver and request for interim waiver.

Therefore, *it is ordered that*:

The application for interim waiver filed by GE is hereby granted for GE's refrigerator-freezer product lines that incorporate dual compressors subject to the following specifications and conditions below. GE shall be required to test and rate its refrigerator-freezer product line containing dual compressors according to the alternate test procedure as set forth in section III, "Alternate test procedure."

The interim waiver applies to the following basic models:

ZIC30*****
ZIK30*****

DOE makes decisions on waivers and interim waivers for only those models specifically set out in the petition, not future models that may be manufactured by the petitioner. GE may submit a new or amended petition for waiver and request for grant of interim waiver, as appropriate, for additional models of refrigerator-freezers for which it seeks a waiver from the DOE test procedure. In addition, DOE notes that granting of an interim waiver or waiver does not release a petitioner from the certification requirements set forth at 10 CFR part 429.

Further, this interim waiver is conditioned upon the presumed validity of statements, representations, and documents provided by the petitioner. DOE may revoke or modify this interim waiver at any time upon a determination that the factual basis underlying the petition for waiver is incorrect, or upon a determination that the results from the alternate test procedure are unrepresentative of the basic models' true energy consumption characteristics.

III. Alternate Test Procedure

EPCA requires that manufacturers use DOE test procedures when making representations about the energy consumption and energy consumption costs of products covered by the statute. (42 U.S.C. 6293(c)) Consistent representations are important for manufacturers to use in making representations about the energy efficiency of their products and to demonstrate compliance with applicable DOE energy conservation standards. Pursuant to its regulations applicable to waivers and interim waivers from applicable test procedures at 10 CFR 430.27, DOE will consider setting an alternate test procedure for GE in a subsequent Decision and Order.

During the period of the interim waiver granted in this notice, GE shall test the products listed above according to the test procedures for residential electric refrigerator-freezers prescribed by DOE at 10 CFR part 430, subpart B, appendix A, except that, for the GE basic models listed above only, the energy consumption shall be determined as follows:

$$ET = (1440 \times EP1/T1) + \sum_{i=1}^D [(EP2_i - (EP1 \times T2_i/T1)) \times (12/CT_i)]$$

Where:

- ET is the test cycle energy (kWh/day);
- 1440 = number of minutes in a day
- EP1 is the dual compressor energy expended during the first part of the test (If at least one compressor cycles, the test period for the first part of the test shall include a whole number of complete primary compressor cycles comprising at least 24 hours of stable operation, unless a defrost occurs prior to completion of 24 hours of stable operation, in which case the first part of the test shall include a whole number of complete primary compressor cycles comprising at least 18 hours of stable operation);
- T1 is the length of time for EP1 (minutes);
- D is the total number of compartments with distinct defrost systems;
- i is the variable that can equal to 1,2 or more that identifies the compartment with distinct defrost system;
- EP2i is the total energy consumed during the second (defrost) part of the test being conducted for compartment i. (kWh);
- T2i is the length of time (minutes) for the second (defrost) part of the test being conducted for compartment i.
- 12 = conversion factor to adjust for a 50% run-time of the compressor in hours/day

- CT_i is the compressor on time between defrosts for only compartment i. CT_i for compartment i with long time automatic defrost system is calculated as per 10 CFR Part 430, Subpart B, Appendix A clause 5.2.1.2. CT_i for compartment i with variable defrost system is calculated as per 10 CFR part 430 subpart B, Appendix A clause 5.2.1.3. (hours rounded to the nearest tenth of an hour).

Stabilization:

The test shall start after a minimum 24 hours stabilization run for each temperature control setting.

Test Period for EP_{2i}, T_{2i}:

EP_{2i} includes precool, defrost, and recovery time for compartment i, as well as sufficient dual compressor cycles to allow T_{2i} to be at least 24 hours, unless a defrost occurs prior to completion of 24 hours, in which case the second part of the test shall include a whole number of complete primary compressor cycles comprising at least 18 hours. The test period shall start at the end of a regular freezer compressor on-cycle after the previous defrost occurrence (refrigerator or freezer). The test period also includes the target defrost and following freezer compressor cycles, ending at the end of a freezer compressor on-cycle before the next defrost occurrence (refrigerator or freezer).

Test Measurement Frequency

Measurements shall be taken at regular interval not exceeding 1 minute.

IV. Summary and Request for Comments

Through today's notice, DOE grants GE an interim waiver from the specified portions of the test procedure applicable to certain basic models of refrigerator-freezers with dual compressors and announces receipt of GE's petition for waiver from those same portions of the test procedure. DOE is publishing GE's petition for waiver pursuant to 10 CFR 430.27(b)(1)(iv). The petition includes a suggested alternate test procedure to determine the energy consumption of GE's specified basic models of refrigerator-freezers with dual compressors. GE is required to follow this alternate procedure as a condition of its interim waiver, and DOE is considering including this alternate procedure in its subsequent Decision and Order.

DOE solicits comments from interested parties on all aspects of the petition, including the suggested alternate test procedure and calculation methodology. Pursuant to 10 CFR 430.27(b)(1)(iv), any person submitting written comments to DOE must also send a copy of such comments to the petitioner. The contact information for the petitioner is: Earl F. Jones, Senior Counsel, GE Appliances, Appliance Park 2-225, Louisville, KY 40225. All submissions received must include the agency name and case number for this proceeding. Submit electronic comments in WordPerfect, Microsoft Word, Portable Document Format (PDF), or text (American Standard Code for Information Interchange (ASCII)) file format and avoid the use of special characters or any form of encryption. Wherever possible, include the electronic signature of the author. DOE does not accept telefacsimiles (faxes).

Issued in Washington, DC, on September 10, 2014.

Kathleen B. Hogan
Deputy Assistant Secretary for Energy Efficiency
Energy Efficiency and Renewable Energy

U.S. Department of Energy

Application for Interim Waiver and Petition for Waiver, 10CFR430, Subpart B,
Appendix A1-Uniform Test Method for Measuring the Energy Consumption of
Refrigerator-freezers

Case No.
Non-Confidential Version

Submitted by:

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U.S. Department of Energy Application for Interim Waiver and Petition for Waiver,
10CFR430, Subpart B, Appendix A--Uniform Test Method
for Measuring Refrigerator-Freezers

I. Introduction

GE Appliances, an operating division of General Electric Co., (“GE”) is a leading manufacturer and marketer of household appliances, including, as relevant to this proceeding, refrigerator-freezers (“refrigerators”), files this Petition for Waiver and Application for Interim Waiver (collectively, “Petition”). On May 2, 2013, the Assistant Secretary granted an interim waiver² and on June 27 the final waiver³ pursuant to GE’s February 28 petition advising the Department that the energy consumption of GE’s new dual compressor refrigerator could not be accurately measured using the test procedure set forth in 430 Subpart B, Appendix A1. GE continued to test the product under the waiver-approved test procedure. In issuing the new refrigerator test procedure on April 21, 2014,⁴ the Assistant Secretary nullified all Appendix A1 waivers, including the one granted to GE. The Department’s decision was explained as follows:

After DOE grants a waiver, the agency must, pursuant to its waiver provisions, initiate a rulemaking to amend its regulations to eliminate the continued need for the waiver. [10 CFR 430.27](#) (m). This final rule addresses this requirement for the Sub-Zero waiver by amending Appendix A to include a test procedure for multiple-compressor products that is based on the Sub-Zero waiver procedure.

² 78 FR 25724 et seq.

³ 78 FR 38699 et seq.

⁴ 79 FR 22320 et seq.

The Sub-Zero, Samsung, LG, and GE waivers for multiple-compressor products will terminate on September 15, 2014, the same date that manufacturers must use the test procedures in Appendix A for testing.⁵

The conclusion that GE can use the Appendix A test procedure to accurately measure energy consumption of the new 2014 models of the product that was previously covered by waiver is, unfortunately, erroneous. GE has made this point to DOE consistently and on multiple occasions: First, in the 2013 waiver petition, next, at the NOPR stakeholders meeting held on July 25, 2013,⁶ and, finally, in its NOPR comments.⁷

GE's representative at the stakeholders meeting most clearly described the operation of GE's refrigerator:

MR. BROWN: Bill with GE Appliances.

Again, I would reiterate that stability for multiple compressor products is not the same as stability for a single compressor product. If you did achieve .042 degrees per hour, it may be more due to luck than actually the product [being] what you'd consider to be stable. Again, with both compressors operating on their own schedule, with their own controls, you may see that the fresh food [temperature] is stable and the freezer's not. Then you'd keep going further and the freezer is stable and the fresh food is not. So that's again why we chose just to use a longer period of time instead of trying to invoke this .042 degrees per hour.

So again, I would reiterate for multiple compressor products, that ... looking at stability with a strict .042 degrees per hour like you would on a single compressor product is ... just not applicable to the multiple compressor product.

MR. BROOKMAN: Okay, thank you. Lucas.

MR. ADIN: Lucas Adin, DOE.

Just a quick follow-up question for clarification. So it sounds like, based on your comment Bill, that a single stability criteria for multiple compressor products may not be appropriate because of how they operate. It's different from single compressor products.

But is it reasonable to say that multiple compressor products do get to some form of stability that is, you know, unique to perhaps each individual product, but at least it's something that you know will repeat consistently over time, or is it something that you can actually identify?

MR. BROWN: Yes. This is Bill with GE again.

You may see a repeating operation in the freezer, and you may see it in the fresh food. But you'd see it on different time frames. So where a freezer temperature may be high, the fresh food may be low, and you know, if you just picture a sine curve, these are sine curves that are out of phase with one another.

So you would never get to a point, or you may never get a point where you've got both of these meeting this type of stability criteria at the same time. So instead of trying to search through the data, to find if there just happens to be [a] place

⁵ 79 FR at 22323

⁶ EERE-2012-BT-TP-0016-0023, p. 85-88.

⁷ 79 FR at 22328 and 22329.

where this occurs, we just chose in our waiver to ... use a long period of time⁸ (emphasis supplied).

One reason GE's product does not achieve stability as described in Appendix A is that it has two compartments—one for fresh food and one for frozen foods—but unlike what we understand to be the Sub-Zero design, the GE compressors are not designed to synchronize such that both compartments achieve temperature stability at the same time. Stated another way, it is not designed such that . . . “the compartment temperature averages for the first and last complete compressor cycles [of each compressor system can] lie completely within the second part of the test [and] within 0.5 °F (0.3 °C) of the average compartment temperature measured for the first part of the test.” Appendix A, 4.2.3.4.2, *paraphrased*. (See below for full section.)⁹

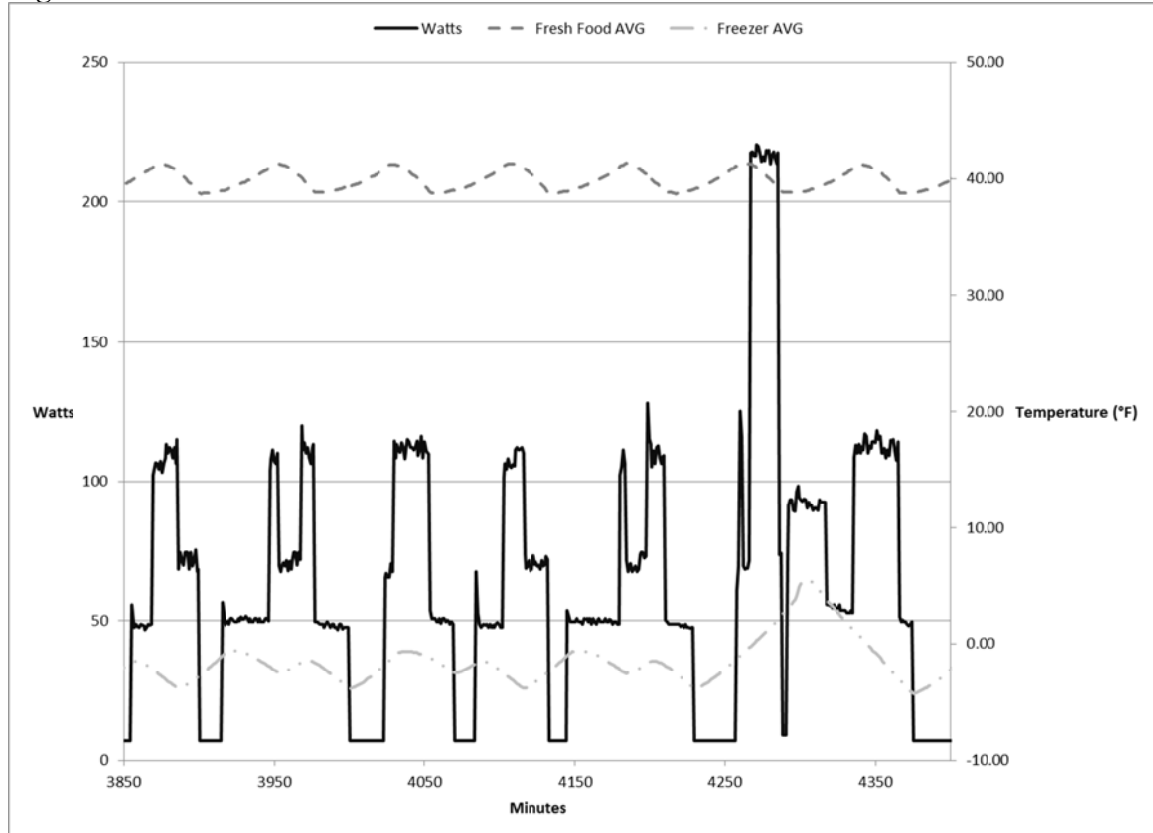
While the Appendix A test procedure does adopt the definition of steady state condition that was first approved in the Sub-Zero waiver and subsequently GE's waiver, it imposes an unachievable goal for GE by requiring that a 0.5 °F (0.3 °C) steady state condition be achieved by comparing the compartment temperatures during a single freezer compressor cycle to the average compartment temperatures achieved during 24 hours of fresh food and freezer compressor cycles. This can only be done if the cycles repeat uniformly. As described above and illustrated below, this does not occur with the GE dual compressor refrigerator.

The non-synchronous nature of the compressors' operation is depicted in the following plot of Watts and compartment temperatures versus time.

⁸ EERE-2012-BT-TP-0016-0023, at p. 88.

⁹ For each compressor system, the compartment temperature averages for the first and last complete compressor cycles that lie completely within the second part of the test must be within 0.5 °F (0.3 °C) of the average compartment temperature measured for the first part of the test.

Figure 1



As is apparent from the above, at no time during the freezer compressor cycles before the defrost (at appx. 4270 mins.) are the fresh food and freezer temperatures in phase: While the fresh food temperature cycles repeat with each fresh food compressor cycle, the freezer temperature cycles repeat with every two freezer compressor cycles. Thus, the Appendix A assumption that the cycles are uniform and in phase does not hold for these GE models. The only relevant impact of this non-uniformity is the confounding effect on making the required calculation. The product provides improved consumer utility because it provides for better temperature and humidity control.¹⁰

II. GE's Proposed Waiver

Based on the above GE requests that the Assistant Secretary grant it a waiver from the Appendix A test procedure and allow GE to test its refrigerator-freezer model pursuant to the modified procedure previously approved in 78 FR 38699, case No. RF-029, and submitted herewith as Attachment 1. This request is filed pursuant to 10 C.F.R. §430.27¹¹ as the test procedure does not allow the energy used by GE's new 2014 model.

¹⁰ GE's new models provide the additional environmental benefit of not using HFC refrigerants: Instead the two compressors use isobutane, which has a GWP of two orders of magnitude less than HFC-134a.

¹¹ The Department's regulations provide that the Assistant Secretary will grant a Petition upon "determin[ation] that the basic model for which the waiver was requested contains a design characteristic which either prevents testing of the basic model according to the prescribed test procedures, or the prescribed test procedures may evaluate the basic model in a manner so unrepresentative of its true energy

The waiver should continue in effect until DOE amends the test procedure to accommodate such products. GE also requests that the Department grant an interim waiver to test and rate the models listed on Attachment 2.

We would be pleased to discuss this request with DOE and provide further information as needed.

GE requests expedited treatment of the Petition and Application. It is critical that the Waiver request be acted on, and hopefully granted, in July 2014 in order to provide sufficient time for final design and testing by the September 15, 2014 effective date of the energy efficiency standard.

I hereby certify that all manufacturers of domestically marketed units of the same product type have been notified of this Petition and Application, list of which is found in Attachment 3, hereto.

Respectfully submitted,

Earl F. Jones, Senior Counsel and
Authorized Representative of GE Appliances

ATTACHMENT 1

$$ET = (1440 \times EP1/T1) + \sum_{i=1}^D [(EP2_i - (EP1 \times T2_i/T1)) \times (12/CT_i)]$$

Where:

- ET is the test cycle energy (kWh/day);
- 1440 = number of minutes in a day
- EP1 is the dual compressor energy expended during the first part of the test (If at least one compressor cycles, the test period for the first part of the test shall include a whole number of complete primary compressor cycles comprising at least 24 hours of stable operation, unless a defrost occurs prior to completion of 24 hours of stable operation, in which case the first part of the test shall include a whole number of complete primary compressor cycles comprising at least 18 hours of stable operation);
- T1 is the length of time for EP1 (minutes);
- D is the total number of compartments with distinct defrost systems;
- i is the variable that can equal to 1,2 or more that identifies the compartment with distinct defrost system;
- EP2_i is the total energy consumed during the second (defrost) part of the test being conducted for compartment i. (kWh);
- T2_i is the length of time (minutes) for the second (defrost) part of the test being conducted for compartment i.
- 12 = conversion factor to adjust for a 50% run-time of the compressor in hours/day

consumption characteristics as to provide materially inaccurate comparative data.” 10 C.F.R. §430.27(l).
GE requests that the Assistant Secretary grant this Petition on both grounds.

- CT_i is the compressor-on time between defrosts for only compartment i. CT_i for compartment i with long time automatic defrost system is calculated as per 10 CFR Part 430, Subpart B, Appendix A clause 5.2.1.2. CT_i for compartment i with variable defrost system is calculated as per 10 CFR part 430 subpart B, Appendix A clause 5.2.1.3. (hours rounded to the nearest tenth of an hour).

Stabilization:

The test shall start after a minimum 24 hours stabilization run for each temperature control setting.

Test Period for $EP2_i$, $T2_i$:

$EP2_i$ includes precool, defrost, and recovery time for compartment i, as well as sufficient dual compressor cycles to allow $T2_i$ to be at least 24 hours, unless a defrost occurs prior to completion of 24 hours, in which case the second part of the test shall include a whole number of complete primary compressor cycles comprising at least 18 hours. The test period shall start at the end of a regular freezer compressor on-cycle after the previous defrost occurrence (refrigerator or freezer). The test period also includes the target defrost and following freezer compressor cycles, ending at the end of a freezer compressor on-cycle before the next defrost occurrence (refrigerator or freezer).

Test Measurement Frequency

Measurements shall be taken at regular intervals not exceeding 1 minute.

ATTACHMENT 2

ZIC30*****

ZIK30*****

[FR Doc. 2014-22228 Filed 09/16/2014 at 8:45 am; Publication Date: 09/17/2014]